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DISEASES OF THE NERVOUS SYSTEM

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DISEASES of the NERVOUS SYSTEM

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A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

The Selective Use of Electroconvulsive Therapy in Manic Patients

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I. *Introduction*

While there is no question as to the general efficacy of electroshock in depressions and particularly in involutional melancholia, the value of electroshock in the treatment of manic patients has not been clearly established. A review of the literature reveals a surprising dearth of definite information. What comments are found are by no means in agreement and clinicians known to us are divided in their views.

It is not the intent of the authors to present an exhaustive statistical study of this problem, but to point out the value of electroshock in certain selected patients among those suffering from a manic reaction. The opinions expressed here were formulated after a study of our experiences on the Psychiatric Service at the University of Minnesota Hospitals.

II. *Review of Literature*

The literature on the general topic of electroconvulsive therapy (ECT) in the affective disorders is quite voluminous. However, the emphasis is definitely on the depressions and actually there is but little discussion and meagre statistical information covering the manic patient. For example, the G.A.P. Report on Shock Therapy[1] which is quite definitive for the most part, makes only the single statement, "It (ECT) may or may not aid in shortening or controlling individual manic episodes." The reports of treatment in manic patients are extremely difficult to evaluate. Definitions of the "manic states" are ambiguous. It is not clear whether the author is reporting cases of acute or chronic manic states. There is, unfortunately, no standard way of reporting results. There is general failure to agree on terminology and the cases reported are not described in detail.

For the most part there are two schools of thought regarding the efficacy of electroconvulsive therapy in the manic patient. There are those such as Bennett,[2,3] N. D. C. Lewis,[4] Ziskind,[5] Impastato and Alamansi,[6] and Kalinowsky[7] who believe that the electrofit is as effective in the manic states as in the depressions. There are others including Kemp,[8] Jessner and Ryan,[9] Wright,[10] and Smith et al[11,12] who believe that electroshock is not nearly as good in the treatment of manic patients as it is in the treatment of the depressed. They claim that the manic patient does not hold the recovery as well as does the depressed patient, and that the value of shock treatment in manic patients is largely that of increased ease of handling the patient and the possibility of shortening the hospital stay.

Kolb and Vogel[13] in 1942 sent out questionnaires to a large number of psychiatrists and they found that electroshock was being used

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much more extensively in treating manic patients than one would judge in reading the literature. We have found sixteen separate statistical reports[5-8,10-12,14-22] on the therapeutic results of electroshock therapy in manic-depressive disease, manic type. Results of treatment (bearing in mind that by necessity some interpretation was necessary because of lack of uniformity in classifying results) were as follows: There was a total of 466 patients. The smallest group consisted of 3 patients and the largest of 184 patients. The rate of "recovery" averaged 62 per cent for the entire series with 26 per cent being the lowest recovery rate reported and 100 per cent the highest. An average of 18 per cent of the patients was considered "improved" and the percentages given for this group ranged from 0 to 33 per cent. The percentage of patients considered to have shown "no improvement" varied between 0 and 25 per cent with an average of 20 per cent. Most of these authors reported a recovery rate of 80 to 90 per cent for patients with depressions.

Some of the comments of the investigators who feel that electric shock gives results in manic patients nearly comparable to those seen in depressed patients are as follows: Bennett[2,3] believes that manic patients do almost as well as the depressed patients but require more shock and closer follow-up for possible relapse. He also feels that electroshock is valuable symptomatic treatment in the control of acute excitement in paranoid and aggressive schizophrenic patients. Nolan Lewis[4] likewise stated that he felt the results of electroshock in manic patients to be nearly comparable to the results seen in the depressed patients. Ziskind[5] stated that he could see no essential difference in the therapeutic results for the subtypes of manic depressive psychosis (manic and depressed types) or in involutional depressions. He felt that his own experience did not bear out the lesser effectiveness of convulsive treatment for the manic type reported in the literature. Kalinowsky[7,16,23-25] stated that the results in manic patients were as good as in the depressions if 2 or even 3 shock treatments were given on the same day early in the treatment. He believed the process was actually broken up by the treatment but he warned that spontaneous remissions were common in manic-depressive disease. He further felt that electric shock seems to fail in the cyclothymic patient who continually oscillates from one phase to another. Impastato and Alamansi[6] state that although some authors advocate not treating these patients, the statistics of these same authors show almost as good results as with the depressed patients. They cite a report of 1941 in which 7,523 cases of manic-depressive psychosis were treated in the New York State Hospitals without shock treatment and of these only 10.9 per cent "recovered." This they point out is certainly far inferior to that of electroshock treated patients.

The second group of investigators, those who felt that shock treatment in manic patients gave results far inferior to those seen in the depressed patients, had the following comments: Jessner and Ryan[9] believed that the value of electric shock in manic patients was problematical but that it did quiet the noisy patients and possibly shortened the hospital stay by nearly one-half. Myerson[26] felt that manic patients should not be treated by electric shock except when extremely difficult to manage. The treatment of manic states by electroshock, according to Sargent and Slater,[27] has produced varied results. However, they believe that striking results were obtained in some manic patients where there was confusion. Winkelman[10] felt that his results in treating the manic patient had not been good and that the treatment had affected them to only a minor degree. Smith, Hastings and Hughes[12] in 1942 reported a recovery rate of 70 per cent in 10 manic patients, and in 1943[11] reported a recovery rate of 56 per cent in 17 such patients. They felt that manic patients did not hold their recovery as well as those who had an agitated depression. They further stated that there was no evidence in either manic or depressive episodes indicating that electroshock prevented future psychotic attacks, nor, on the other hand, that it might interfere with spontaneous clinical recovery. Kemp[8] found the results in manic patients to be not nearly as good as for the depressions and reported a recovery rate of only 25 per cent. Rennie[28] reported a follow-up study of 208 cases of manic-depressive disease which were treated without shock and found that 93 per cent recovered from the first attack on the average after 2½ months of hospitalization.

Thirty-two per cent of these patients had a 10 to 20 year remission and 79 per cent had recurrences. Epstein[19] spoke of a group of mixed or "undifferentiated psychoses" (atypical manic-like psychotics with paranoid elements or schizophrenic reactions with manic features). This group he reported as having done very poorly on electric shock, not much better than the clear-cut schizophrenics.

A number of investigators stress the importance of giving more frequent and a greater number of convulsions in manic patients than is found necessary in the depressed patients. Bennett,[2,3] Lewis,[4] and Kalinowsky[16,23] all felt that at least 12 and up to 20 or more treatments were necessary. They also stress closer follow-up to prevent relapse. Kalinowsky in particular stresses the point that the 2 to 3 treatments weekly usually given in depressed patients was ineffective in the manic patients and gave discouraging results. Thorpe[29] described what he terms "intensive treatment." He felt that to get results in the manic patient it was necessary to push the electroconvulsions to the stage where mental confusion was produced. Within 1 to 2 hours after the first convulsion, he recommends giving a second and that this procedure is continued at increasing intervals until it was judged that the degree of excitement was definitely reduced. This he felt might require 3 to 6 treatments during the first day.

III. *Clinical Results*

We maintain in the University of Minnesota Hospitals a 35 bed psychiatric service used primarily for instruction. During the two and one-half year period prior to April 1948, we have admitted to our service 29 patients in whom manic symptoms were sufficiently prominent to justify the diagnosis of manic-depressive disorder, manic type, with or without other features (schizoid, paranoid or psychopathic). We make no attempt to deal statistically with the case material since the total number is small and since the nature of the cases were extremely variable. Our experience is summarized in the accompanying table.

While the overall results are about the

SYMPTOMATIC GROUPING	Total Number Cases	CASES TREATED WITH ELECTROSHOCK			CASES TREATED WITHOUT ELECTROSHOCK		
		Number Cases	Home*	Other Hosp.†	Number Cases	Home*	Other Hosp.†
HYPOMANIA	13	5 (38%)	5	0	8 (62%)	7	1
Uncomplicated	9	4	4	0	5	4	1
With Schizoid Features	2	0	0	0	2	2	0
With Paranoid Features	1	1	1	0	0	0	0
With Psychopathic Features	1	0	0	0	1	1	0
ACUTE MANIA	5	3 (60%)	2	1	2 (40%)	2	0
Uncomplicated	2	1	1	0	1	1	0
With Schizoid Features	1	1	1	0	0	0	0
With Paranoid Features	1	0	0	0	1	1	0
With Psychopathic Features	1	1	0	1	0	0	0
DELIRIOUS MANIA	11	8 (72%)	6	2	3 (28%)	2	1
Uncomplicated	4	2	1	1	2	2	0
With Schizoid Features	3	2	2	0	1	0	1
With Paranoid Features	3	3	2	1	0	0	0
With Psychopathic Features	1	1	1	0	0	0	0

Clinical Results in 29 Patients in Relation to Symptomatic Grouping Showing the Number of Patients Treated With and Without Electroshock and the Final Disposition in Each Group.

*"Home" Signifies that the Patient has been able to Stay at Home a Sufficient Number of Months to Strongly Indicate Recovery from the Attack.

†"Other Hospital" means Failure to make Sufficient Improvement and the Necessity for Transfer to Another Hospital for Prolonged Care.

same for the group treated with electroshock and for the group not treated with electroshock, the extreme variability of the case material makes it impossible to compare the treated and untreated groups. The fact that good results were obtained in both groups might point to the conclusion that manic patients do as well without as with electroconvulsive therapy. Indeed, the chief purpose of this paper is to point out the conditions under which electroshock is of definite value and those conditions under which it is of little value.

It is difficult to properly evaluate the effect of any treatment procedure in an illness which tends to spontaneous recovery and the evaluation is made more difficult by the number of other treatment procedures being used concurrently. Nevertheless the following points stood out with sufficient clarity to appear valid:

1) A sedative or quieting effect is noted. This is most noticeable in the more disturbed and it may be a life-saving measure by preventing exhaustion in a delirious patient. Almost all patients become less active. This effect is often transitory if the treatments are widely spaced or given in insufficient number.

2) The length of hospitalization is materially shortened. No doubt most of the patients we have treated with electroshock would have recovered without its use, yet the ability to shorten the hospital period is a practical advantage both from the standpoint of the patient and of the hospital.

3) The patient becomes more accessible to psychotherapy.

We have estimated electroconvulsive therapy to be approximately 75 per cent as effective in manics as it is in depressed patients.

IV. *Indications For and Against the Use of Electroconvulsive Therapy*

The problem "Is electroconvulsive therapy effective in manic patients?" usually presented in the literature should be restated to read, "In which manic patients is electroconvulsive therapy effective?" and "How can it be most effectively used in such manic patients?" In deciding whether or not to use electroshock treatment in an individual patient, one's clinical judgment is influenced by a number of factors.

1) The degree of excitement is the most important indication for the use of electroshock treatment. It may be a life-saving factor in the treatment of an exhausted patient while the delirious and acute manics become less difficult to manage.

2) The treatment appears to be more efficacious if given early in an attack.

3) There are a number of favorable prognostic factors which apply to a large degree regardless of the type of treatment under consideration:

(a) That the illness be of a relatively acute onset.

(b) That a schizoid or psychopathic "overlay" to the affective illness be minimal. A paranoid admixture does not always adversely effect the outcome of treatment.

(c) That the patient's previous personality be considered "good" (adequate personality integration, sexual adjustment, ability to socialize, etc.).

(d) That the exogenous factors in the patient's illness be more prominent than the endogenous factors.

4) Patients in whom one or more of the following factors are present tend to show little improvement with electroconvulsive therapy:

(a) Where the illness can be described as circular in type.

(b) Where there is a strong admixture of schizoid or psychopathic traits.

(c) Where the illness is long standing.

(d) Where electroconvulsive therapy has been used previously without benefit.

There can be no hard and fast rules. Many psychiatrists prefer not to use electric shock treatment in the first attack if the patient can be managed otherwise. Certain physical contraindications to shock treatment, such as pulmonary tuberculosis and coronary artery disease, pertain here as they do in the depressed patient. Many other factors such as memory defects in a patient with professional training have to be measured against the increased chance of prolonged hospitalization.

V. *Considerations in The Use of Electroconvulsive Therapy*

The manic patient nearly always requires a larger number of treatments than does a similar depressed case. As many as fifteen

to thirty convulsions may be necessary to relieve a manic patient whereas six to twelve convulsions are usually found adequate in treating a depressed one. Many "reasonable" manics with favorable case histories may respond readily to a small number of shocks (four to six). On the other hand "unreasonable" patients and especially those with a strong paranoid or schizophrenic coloring usually require more treatment and tend to relapse more readily.

Frequency of treatment should be governed by symptomatic needs. Electroshock is well tolerated when given several times a day. Indeed in the delirious type it may be more effective this way, a smaller total number of treatments being required than would be the case if they were given at greater intervals. After the acute excitement phase has subsided, the usual rate of three treatments a week is generally satisfactory as it provides the physician with a better opportunity to judge the patient's progress.

The indications for terminating ECT are not always clear. Upon the appearance of confusion it is usually wise to stop the treatments or to decrease their frequency. If good symptomatic results are achieved beforehand, it is not necessary to bring the patient to the point of confusion. When in doubt two or three additional treatments will serve as an additional safeguard against relapse.

The manic patient appears to have a greater tendency to relapse than does the depressed patient. This common tendency can be lessened by careful observation during the weeks after shock treatment has been discontinued. The same principle should be followed after the patient is discharged. A return visit within at least two weeks of discharge has been found to be of value. Relapse after discharge is fairly common even though there was no pre-discharge indication that it might occur. ECT should be reinstated if signs of relapse occur in which case three to six treatments will often suffice. While one may hesitate to resume shock treatment at the moment a convalescing manic patient has a possibly transitory emotional upheaval, it should be kept in mind that if the patient relapses to his previous level of excitement, a larger number of shocks will be necessary than would otherwise be the case.

Complications which occur during treatment are similar to those which occur in the treatment of the depressed patient. Of particular note is the type of patient who for the first time develops paranoid or schizophrenic symptomatology during the course of shock treatment. Such cases may clear up with continued ECT but this is contraindicated if marked confusion occurs. In the latter event a number of weeks of hospital care with careful psychiatric and nursing management may determine whether the condition will clear or whether the patient will develop a frank schizophrenic psychosis.

It is hardly within the scope of this paper to discuss the general management of the manic patient. In order to keep perspective, however, it must be emphasized that psychotherapy during the convalescent stage, intelligent nursing management, hydrotherapy, hospital routine and counselling of the patient's family, play varying but important roles in the treatment of these cases.

VI. *Illustrative Cases*

Case 1: A Case Favorable for the Use of ECT.

Case 1 was a 35 year old housewife who was diagnosed manic depressive psychosis, hypomanic phase (uncomplicated). Her illness had begun 8 weeks prior to admission, 6 months after the birth of her third child. She had recently moved into a new home in a strange community; her husband had just returned from Army Service and there were many problems of readjustment to civilian life. Hospital care was necessary because of increasingly severe restlessness, press of ideas and speech, loss of sleep and quarrelsomeness. Upon hospitalization she was found to be well oriented but very demanding and negativistic. She expressed the belief that she never had felt better in her whole life; suddenly everything had become quite clear to her and she wanted to write a book and tell the world about it. Emotionally she was extremely labile; at times she was suspicious, arrogant or facetious.

At the age of 28 she had had a similar illness lasting nearly 6 months from which she recovered spontaneously. This was her only previous mental illness. Her personality was described as cheerful, outgoing, capable and socially successful. She was always the "life of the party" and had many friends.

After a preliminary period of study she was given 12 electro-convulsive treatments in 29 days. The first three treatments were given on consecutive days. Then 3 treatments were given weekly for 2 weeks. Thereafter 3 more treatments were given at progressive intervals of 3, 4 and 6 days. Following the second ECT she began to be less active and was much better able to eat

and sleep. She remained, however, over-talkative and resisted ward activities. After the 6th ECT she became friendly and cooperative and took a great interest in occupational therapy. Sedative tubs, the hospital activities and conferences with the husband were important in the treatment program. Psychotherapy was begun early and a fairly adequate degree of insight was achieved. She was discharged to her home in seven weeks, recovered from the attack.

Comment: Favorable factors were the relatively acute onset, the presence of exogenous stress, the "good" personality makeup and the absence of clinical evidence or history of schizophrenic or psychopathic tendencies. ECT was indicated since her degree of excitement was sufficient to make handling and treatment a problem. It proved to be of great value in lessening the patient's distress and greatly shortening her illness and the period of hospitalization.

Case 2: A Moderately Difficult Treatment Case.

Case 2 was a 40 year old housewife who suffered from an acute manic psychosis with paranoid features. Her difficulties had begun with a depression which followed the death of her father 1½ years previously. She had been hospitalized elsewhere for several months on two occasions. During this time she had received 71 insulin and 3 electro-convulsive treatments. Her recovery had been incomplete and she had remained nervous, mildly depressed and worried particularly over religious matters. A few weeks prior to her admission to our service, she became progressively over-active, over-confident and elated. Upon hospitalization she became acutely excited, assaultive, profane and noisy; she expressed paranoid delusions of religious coloring.

At age 27 she had had a depressive illness from which she recovered in two months without psychiatric therapy. This was her only previous personality disorder. Her personality was characterized by a tendency to be rigid and opinionated. She was compulsive about cleanliness and overly meticulous in her housework. She had always been unduly scrupulous about religious matters. She was sexually frigid, though otherwise happily married. She was socially well adjusted.

The violent behavior largely subsided after the 5th treatment. By the 10th treatment the patient was confused but quiet and cooperative. As her confusion cleared, she displayed poor insight and had poorly veiled paranoid ideas. She demanded her release and was removed from the hospital but was readmitted in 8 days having relapsed into the same paranoid manic picture previously seen. She again showed dramatic improvement after 7 ECT but soon began to show signs of relapse so that 9 additional treatments were given. She now cooperated in psychotherapeutic interviews and gained insight into the difficulties of her personality and the nature of her condition. She was discharged three weeks after the last shock treatment; follow-up study after 18 months at home indicates that the patient has remained symptom-free and that she has returned to her previous level of adjustment.

Comment: The unfavorable features were the paranoid symptoms, the rigidity and psychasthenic qualities in her usual makeup, the long duration of the illness and the poor results from previous treatment. On the other hand ECT was clearly indicated by the violent manic behavior and her aggressive paranoid tendencies. Although shock treatment was dramatically effective in controlling the patient's violent symptoms, a total of 26 treatments was necessary and early relapses occurred. This case illustrates the need for more shock treatment than the average depressive patient requires, the desirability of tapering off treatment instead of terminating abruptly and the danger of relapse in this type of case.

Case 3: An Unfavorable Case for Treatment with ECT.

Case 3 was a 25 year old housewife, who became ill following the birth of her first child who was born with a spina bifida. At the time of her admission to the psychiatric service three weeks later, she was in a delirious manic state; she was assaultive and extremely hyperactive; later a paranoid attitude became evident. She slept very little and continued to laugh, sing or cry in spite of some benefit from sedative tubs and medications. Likewise there was but little clinical improvement to both ECT and insulin therapy. She received a total of 17 ECT and 24 insulin treatments before she was removed from the hospital against advice. Follow-up indicates that patient was able to stay at home though she remained elated and continued to have violent outbursts for many months. Past history revealed nervousness most marked during puberty but no previous psychotic illness. Her prepsychotic personality was "poor"—marked stubbornness and a violent temper being outstanding characteristics.

Comment: In an acute excitement with sudden onset and significant precipitating factors, one usually expects considerable symptomatic relief from ECT. Only a minimal favorable response was obtained in Case 3 and this was short-lived. It appeared to us that the "psychopathic" feature of her prepsychotic makeup along with the paranoid coloring of her illness were important factors in this less favorable response.

VII. *Summary*

1) "Is electroconvulsive therapy effective in the treatment of manic patients?" Opinions expressed in the literature vary. Some believe that electroshock is as effective as it is in the treatment of depressions; others claim poor results.

2) This difference of opinion is largely resolved if the question is posed: "In which manic patients is electroshock most effec-

tive?" The indications are comparable to those used for depressed patients of the manic-depressive type (not the involutional depressions).

(a) The course is shortened in favorable cases; i.e., cases showing acuteness of onset and favorable personality features.

(b) Such symptoms as acute excitement, assaultiveness and exhaustion can be controlled or prevented. We found that we used electroshock therapy twice as often in delirious manics as in hypomanics.

(c) Less satisfactory or lasting results are likely in cases which are of a circular manic-depressive type or where there are strong psychopathic or schizophrenic admixtures. A history of previous failures to improve under electric shock therapy is also an unfavorable sign as would be expected.

3) Our experience coincides with a large number of others in that manic symptoms require more frequent treatment and a greater total number of treatments than do depressive symptoms. The danger of relapse is greater and the patients need to be followed longer and more closely because of this.

4) The case summaries serve to illustrate the role of electroconvulsive treatment in the total treatment program which includes group activity, psychotherapy and counselling of the patient's family.

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Group Therapy with Alcoholics in a Hospital Setting

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This paper reports an experiment in group therapy with alcoholic veterans. The period of time covered is from 1945 to date. The hospitals where sessions in group therapy were undertaken were: Neuropsychiatric Hospital, Los Angeles Veterans Administration, Fort Meade Veterans Administration, Roanoke Veterans Administration and Connecticut State Veterans Home and Hospital. Since many of the settings were dissimilar, owing to various measures of administration and interpretation, a survey of conditions at the present setting, the Connecticut State Veterans Home and Hospital, Rocky Hill, Connecticut, is presented.

Although the term "group therapy" is used, group therapy in the strictly orthodox sense is not intended or implied. For example, group therapy *per se* seeks passivity of the therapist to such a degree that the therapist is no longer called a "group leader." Too, sessions for group therapy are thought of in terms of scores of meetings rather than averages of ten or so group sessions. Orthodox group therapists mention the fiftieth or sixtieth meeting of the group. At the 1949 Conference of Group Therapists, the concensus of opinion indicated that while 95 per cent of the children seeking adjustment could be benefited by group therapy, merely 15 per cent of the adult population would be acceptable as individuals who would benefit from associations derived from the group. This experiment, therefore, deals with the remaining 85 per cent who would otherwise not have received treatment.

In a public hospital, particularly in a veterans' hospital, time is at a premium. Nevertheless, while working with quantity, quality of workmanship must not be overlooked, but one must cut the pattern to fit the cloth, working with what there is.

A survey of 232 patients referred to the Commission of Alcoholism Clinic at Rocky Hill Hospital indicated the average education of the group to be of the eighth grade. Some of the patients had had no formal schooling while a few were college graduates. Although some of the patients were in their 20's, the greatest number referred to the Clinic were in their 50's, the average age being 46. Practically all of the patients were of the immature, inadequate, pithiatic makeup. The majority were single. Those who were married, were, more often than not, either separated or divorced. Family ties were lacking. Most of the patients were unskilled workers. Quite a number had not been gainfully employed for many years and had been in the barracks setting during this time. Some of those in the barracks setting did various work details about the hospital and home for a few hours each day. Most of the patients admitted that they had not attended church for years. Practically all of the patients seen were alcoholic complicated by some degree of medical, psychiatric or psychosomatic disability. A random sampling of patients given Wechsler-Bellevue testing revealed an average intelligence quotient of 89. Experiments in psychoanalytic concepts during group sessions revealed rigidity, resistiveness and near panic among the patients. Because of these multiple factors one could not hold to a fast theory that once energies are freed, the individual himself would find suitable social outlets. Instead, a new technique had to be developed, utilizing more of a repressional-inspirational level by urging the patient to suppress asocial or worrisome thoughts or wishes, seeking an active interest in life, the community, spiritual aspects, constructive play, etc.

With this thought in mind, therefore, the book "Alcoholic Anonymous" was freely drawn upon as a text. Owing to the limited number of meetings the patients could attend prior to leaving the hospital setting, the average number of meetings being seven, a bona fide Alcoholics Anonymous group would have served no useful purpose. Many of the patients, upon returning to their home communities, became affiliated with Alcoholics Anonymous groups, having been indoctrinated to the AA principles during their period

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of hospitalization. This was particularly true when there was no nearby Commission on Alcoholism Clinic. Some of the patients had previously attended AA meetings but had rebelled against other members boasting of former alcoholic escapades when they, themselves, had not been conditioned to this type of catharsis, having had no explanation of the principles upon which the AA is built.

Although lacking heterogeneous cohesion, it is apparent that powerful forces can be mobilized in groups, resulting in production of remarkable achievements in the individuals making up that group. Many alcoholics, addicted to "Sneaky Pete," a cheap wine, while not giving up their intake altogether, had certainly lessened the daily amount.

Many of us in psychiatric work do not have the personality which intuitively takes to group leadership. Many of us go into this field because of our own psychological problems. Often we, just as the patients, wish to keep our problems secret and isolated and therefore tend to favor a secret and isolated treatment for the patients. Often, too, fearful of "unscientific" methods and religious implications and mass hysteria or mob psychology, we have a tendency to throw out the baby with the bath water.

Group interaction is the basic medium for the release of emotional difficulties. The patient is considered as a social product, his natural feelings suppressed because of the rules of society. His difficulties in adjustment and his failure to express his emotional troubles are the result of his inability to face the group and to find his place in it. By facing this group, which is friendly to him, a group that is composed of individuals faced with the same problem, the patient can, when he has learned to understand that the problems of others are no different in kind, but only in degree from his own, identify himself with them.

Our first problem to be discussed was: Could the mental hygienist work with a group, discussing the fundamentals of the AA with alcoholics when the mental hygienist was, himself, a non-alcoholic? Would they accept him? In working with members of the AA, the author has many times been lead to believe that alcoholism is a mysterious ailment of which one cannot achieve an understanding unless he has served a stewardship to Bacchus. Although, undoubtedly, it may serve as an opportunity of better understanding, it does not necessarily follow that one must have suffered a fractured tibia to effectively set that bone structure. It is the author's contention that one does not necessarily have to be an alcoholic to understand an alcoholic. This is a matter of individual differences. There are many alcoholics who fail to understand fellow alcoholics. The author also believes there is a vast difference in *understanding* and *treatment*. To *understand* does not necessarily endow the ability to *treat*.

If this be true and the mental hygienist strives, by contagion of spirit, to alter the alcoholics' habitual attitudes through reorientation and reeducation, it does not necessarily follow that the mental hygienist, a psychiatric social worker, must be an alcoholic if he is conducting group therapy. It does imply, however, that the group therapist can discuss spiritual values without smugness and without becoming sanctimonious. The group therapist cannot afford to be facetious and say to himself, "Spiritual values? In what fibre tract are they?" To be effective, group therapy must be approached by the therapist with the belief, "There, but for the grace of God go I."

How the alcoholic reacts depends on the mutual impingement of personalities, the sum total of mutual inner strivings, not only of the group itself, but of the therapist as well. Sometimes too inarticulate to verbalize an iota of what they know or have an awareness of the unconsciousness of the therapist, the alcoholic, however, is nobody's fool. He is often aware of chicaneries, compromises and maladjustments. Even those with obviously low intellectual endowment are quite aware of genuineness, of sincerity of purpose, of realizing whether or not the therapist actually wishes to help them to help themselves but is hampered by restrictions and limitations imposed upon him. Usually the alcoholics can determine in their own minds whether the therapist is interested in them as individuals having the same basic needs, desires, cravings, struggles as they, themselves, have. Fundamentally, the relationship between the alcoholics and the group therapist is identical with any group of human beings where there is a true understand-

ing and a sense of oneness, of koinotropy, of "we," rather than "you and me" or "ME and you."

The peculiarity of the setting in which group therapy was conducted merits fuller explanation. The population of Rocky Hill Hospital is approximately 448. The barracks population, adjacent to the hospital, totals about 577 men. Hospital admissions are on the average of 256 per month and discharges from the hospital 234 per month. Of this number, approximately 55.7 per cent of the patients discharged from the hospital proper go to the barracks. The Commission on Alcoholism Clinic opened at this hospital on October 1, 1948. The hospital is jointly a hospital for the Veterans Commission, State of Connecticut, and the Connecticut Commission on Chronically Ill, Aged and Infirm, 66 of the 448 patient population coming under the jurisdiction of the latter commission and not necessarily being veterans.

The number of referrals to the COA Clinic vary from one physician to another, depending upon the degree of awareness of the problem, his acceptance of the clinic, the viewpoint of the individual physician, and the recognition of the total need situation of the patient. Patients are given freedom of choice of either accepting or rejecting the services of the clinic. Patients are accepted from the hospital setting only but they are carried after they go to the barracks setting. If they return to their homes they are referred to a COA Clinic in their own community for continued treatment since there are no provisions in the hospital setting for out-patient treatment. Since the clinic opened, there are many men in the barracks setting who, because they have not been hospitalized since that date, have not been seen by the clinic. Many of these men not seen have an equal, if not greater, alcoholic problem.

Executive control in regard to the problem of alcohol in the barracks setting is confined to "dishonorable discharge" from the barracks for habitual intoxication. Approximately 10 persons per month are discharged in this manner. This means they are not eligible for return to the barracks for a period of 6 months except in an emergency. Patients in the hospital are often found to have liquor in their possession. The Veterans Home permits any veteran, regardless of age and physical condition, to enter the barracks and remain as long as he wishes. A detail, consisting of a few hours work per day, is requested of the barracks members. Some jobs are then available at $50.00 per month in either the hospital or barracks setting. It is difficult at times to have patients excused from their details in order to return to the clinic for continued treatment, house-keeping details being considered by some to be more important than rehabilitation.

Admissions to the barracks depend a great deal on weather and employment fluctuations. In the colder months, many men come to the barracks for admission, leaving again with the advent of warm weather. Also, when a drop in the employment market occurs, veteran admissions increase. As one admission recently graphically stated, "Even smart guys can't get a job now," it takes no astute observer to sense that this situation fosters dependency. The veterans in the barracks setting are free to go to town on passes and a bus schedule is maintained. A short cut, "the Burma Road," is used to shorten the 1½ miles to Rocky Hill. It is no rare sight to see veterans staggering from town, falling along the side of the road. The stench of alcohol often pervades the evening bus from town to the barracks.

From October 1948 to June 10, 1949 there have been only 271 referrals to the COA Clinic so that many of the barracks population have never been seen by the clinic. The clinic is aware of this situation but can do nothing about it because of the shortage of personnel and the difficulties involved in the process of attitude changing of the staff. Many clinic patients, however, have felt discriminated against, believing they have been singled out for attention, while others, with more of an alcoholic problem than they, have never been approached.

The barracks is an unusual setting of society morés in reverse. As one veteran graphically illustrates it, "It's just the opposite in the barracks as it is in outside life. In outside life, I got 3 brothers. None of them drink. They look down on me because I drink. Here, practically everybody in my barracks but me drinks and they look down on me as a reformed drunk." Many of the patients, at first receptive of treatment at the clinic,

have dropped out, saying that their barracks mates had called them "sissies" for not taking a drink with them. It was difficult for them to identify themselves with the group with which they were receiving treatment since this group, meeting only two to three hours per week, could not compete with the larger group with which they were spending the balance of their time. A motion picture is usually given weekly. Scattered entertainments in the evening represent the balance of planned activities. Having so much free time and so little direction to utilize it, the average barracks member has little motivation to discontinue drinking. Efforts to establish a bona fide Alcoholics Anonymous group in the barracks setting, despite the desire of some of the barracks members, has met with little success owing to the apathy of administrative channels from which approval would have to come for the establishment of such a group. Despite the hospital and barracks population numbering over a thousand men, weekly church services, held on the grounds, are poorly attended despite the fact that practically all of the barracks members and most hospital cases are ambulatory. Bus service to and from the chapel is provided and even non-ambulatory patients could, if they so desired, be transported to and from services.

Interpretation of alcoholism in the hospital and barracks is a process. The superstition most cherished, it appears, is that of weak character and the virtues of will power and self-control. It is the author's opinion that while alcoholism is a disease, it is mere superstition to believe that the individual has a craving for alcohol. What many individuals do crave, however, is a partial or complete unconsciousness. Alcohol is a means of inducing it. Obviously, no person craves unconsciousness unless he is in pain. The question, therefore, is what kind of pain has the alcoholic that makes him crave unconsciousness? There is no point in curing an alcoholic of drinking. This has been demonstrated in other settings where conditioned reflex treatment alone is used without benefit of correlated psychotherapy. An alcoholic, with the alcoholic addiction removed, still remains a sick person, often times going to drugs, instead. Every alcoholic is ill in some way and uses alcohol as an opiate, having a problem that has become so difficult to endure that he longs for an anesthesia. Alcohol fits into the general scheme of things because of its easy accessibility. The *cause* of his suffering is the problem, NOT his *method* of relieving it. One might just as well hurl epithets at a cancer victim for craving morphine.

A certain percentage of the patients seen in group therapy at the hospital setting are unfortunately mentally and physically below the so-called norm. They have neither the stamina nor the mental resources for even simple manual labor. They are content to escape from the reality situation in the workaday world and despite freedom from major physical defects, cannot seem to exist without a parental shoulder on which to lean. Some, too, cannot endure the tension and strain of an ordinary factory job and use alcohol to blunt their senses. Their lives are drab, presenting too much of a challenge to outside life and being offered little constructive rehabilitative challenges once they are in the barracks setting. Some are borderline psychotics. During periods of elation, they swear off alcohol, announce they are cured, and stay sober as long as the cycle lasts. Everyone, except cynical old COA, believes they have turned over new leaves. These cycles, however, often are a year apart and occur if the person drinks or not. Of course, alcoholism makes the condition worse, but with a mental toothache for weeks or months without letup, one can appreciate what these periods of depression mean to such a person. Many, too, have involutional melancholia to further complicate an already complex picture. This illness does not develop overnight and despite state rulings that require psychiatric examinations of inmates every 6 months, these have not been carried out.

Many patients are infantile in makeup, but marked symptoms do not always transpire. Most infantile adults seem normal, pleasant people, but always feel rather inadequate. Life seems to be too much for them. Earning a living gives them much the same feeling of bewilderment and anxiety that it would to a small child. It is a challenge that cannot be met. They cannot adjust themselves to an adult relationship in the marriage situation nor to the job of being

a parent. They react in a childish way to an adult situation. Since they cannot help their limitations, it baffles and humiliates them just as much as it does anyone else. The majority of these individuals continually belittle the barracks and the hospital, complaining that they work on details without receiving any pay. Yet they make no constructive effort to leave the institution for outside work, often rejecting proffered assistance in this direction.

While inspirational - repressional methods are used in group therapy sessions, the goal of treatment is not penitence, but indifference, since inspirational methods can, unless properly channelized, intensify the alcoholics' sense of guilt about drinking. Making a person ashamed of *self* and of an *act* are two different things. The alcoholic is taught that it is stupid to take alcohol as an anesthetic, but it is no more immoral to crave alcohol to anesthetize an emotional pain than it is to crave sodium bicarbonate to relieve a belly-ache. An alcoholic may be the victim of many things, but alcohol is the least of his troubles. Alcoholism is always a symptom of something else.

Gregariousness, the herd-instinct, call it what you will, prompt some of the members of the group to wish to bring friends who had not been invited to participate. The reassurance that the group therapist, although not an alcoholic, is just like themselves prompts highly desirable reinforcement. A prophylactic measure against the danger of becoming static because of the homogenecity of the group is the periodic infusion of new blood, the addition of new members. This requires a readjustment of the emotional linkages of all.

The meetings are informal. Candy is always on the table. One of the time honored forms is the ritual of eating together. Being given food is the first expression of affection the child understands. The symbolic value of being given something to eat remains high throughout life. The sharing of something to eat, going back as it does to the maternal function of nursing, leads to the allied expression of affection. Members are also urged to try candy when feeling jittery rather than resorting to alcohol. It has also been found that the candy served as a useful technique when members of the group thought someone talking too much, urging him to take a piece of candy, thereby filling his mouth. Talking is important to many; uncritical but attentive listening is also important. When one listens to the other, this appears to recharge an alternating current. At times the talk and interchange of ideas is sparse and meager, making one believe that speech, itself, was given to us for the purpose of disguising our thoughts. Frequently this leads to thinking, for creative listening, being able to put oneself into the others place, can encourage creative thinking. If it cannot do this, if hostilities cannot be repressed or diverted, they can at least be expressed and discussed.

Simple group therapy expedients may be categorized under 3 major headings: 1) Practical support, consisting primarily of guidance, advice, and assistance in management of life situations and environmental difficulties; 2) Emotional support, consisting of understanding, empathy, encouragement, companionship, listening; 3) Reorientation and reeducation, educating the patient to tolerate his own conscious and unconscious needs and cravings.

The mechanism of the process involved is based on several elements: a) Re-education, tending to give the alcoholic a comprehension of emotional reactions which enable him to understand developments in his behavior; b) Transference, producing normal socialization, first from patient to patient and then gradually widening its sphere; c) Catharsis, permitting the patients to express the feelings of guilt and inferiority and still feel accepted; d) Interaction, influencing the alcoholic, who had hitherto regarded his problems as isolated and peculiar to himself alone, to realize that they are no different in kind, but only in degree and to realize that it does not matter what a person has—what does matter is what he does with what he has.

The meetings are not to be considered as lectures. Instead, they are to be viewed as springboards from which discussions can develop. In other hospital settings, when combined with conditioned reflex treatment, the therapy described herein proved effective in 52 per cent of the cases. In the absence of correlated treatment of conditioned reflex methods, group therapy at Rocky Hill

Hospital has not met with the same degree of effectiveness. Reasons, however, are obvious, owing to the peculiarity of the setting.

The author, however, believes in this type of therapy in working with alcoholics at this setting for the following reasons: a) The patients described represent the 85 per cent who would have been rejected from orthodox group therapy methods. b) The length of stay in the hospital setting does not permit the employment of orthodox group therapy methods and patients, once leaving the setting, are not permitted to return for outpatient treatment. c) The indoctrination to the Alcoholics Anonymous principles prompts many patients to join the AA group nearest their home community or barracks setting. d) The philosophy expounded by the AA groups can be utilized without rediscovering America, making it less confusing to the patient if he understands the AA group philosophy rather than presenting him with a different approach to the situation. e) The majority of the patients seen at the COA Clinic are of the dull-normal group with slightly less than average intelligence. The average age is 46, average education is the 8th grade, the majority being unskilled workers with spotty employment records and in jail at least once for breach of peace or drunk and disorderly conduct. They are in a setting where they have retreated from the reality situation, where they have little opportunity for creative endeavors, where they have too much leisure, where they have segregated themselves with members of their own sex, lost active touch with their families, contacts with their churches. f) Psychoanalytic concepts frighten them; brief psychoanalytic therapy is inclined to stir up too much anxiety. Homosexuality, while suspect, is not explored, although individual psychiatric interviews indicate latent homosexual conflicts in many of the cases. The setting, however, is not conditioned to psychoanalytic concepts, either from the point of the administrator or of the patients themselves. g) There is a subtle, corrupting temptation for the gratification of latent passive tendencies, to relegate authority to someone else, to submit meekly to what one is told to do and to expect in payment protection and patronage. It is comfortable to many of the group to lay aside the responsibilities of maturity and to resume a childlike relationship to an authority comparable to that of parents. This authority, they believe, must not only utilize their services—no matter how briefly—in the armed services, but it must reward and support them. It is a continuation of this tendency that is destructive to mental and spiritual health. The therapy attempts to have such a group understand life as it actually is, not as they wish to have it be.

In essence Glover's philosophy is attempted as stated in his *The Psychology of Fear and Courage:* "You do not begin by telling him he is silly; you encourage his sense of responsibility, give him something sensible and useful to do, show him a good example, tell him the truth, admit your own errors, and be friendly with him. He will do the rest himself."

The group therapist in such a setting may grow discouraged, realizing his own limitations and contributions to such a widespread problem and begin to feel that only concentrating on the administrative angle of changing external conditions within the structural setting can effectively combine for constructive rehabilitation. Or, not thinking beyond the relatively few successes he has had, and failing to see the other sources round and about him which appear to nullify or destroy his efforts, grow smug about his contribution to the adjustment of the alcoholic patient. Neither choice is necessary. The realization that while one's scope is limited, it is, nevertheless, worthwhile for those who will be taught to help themselves.

Note: The viewpoints of the author are not necessarily the viewpoints of the Connecticut State Commission on Alcoholism nor the Connecticut State Veterans Home and Hospital.

Resistance Analysis and Psychodamnitis

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A most prominent feature of dynamic psychiatry is the illuminating shaft of light it throws on psychic functioning. Even that which at first glance appears nonsensical is so primarily because we ourselves lack sufficient insight. Jung's contribution to dementia praecox[1] is perhaps an outstanding example of the notion that behavior and the entire field of psychic process is capable of being intelligently understood in terms of the patient's anamnesis and the dynamics he has become skilful in employing. Earlier, too, Freud had attempted[2] to provide a definite relationship between personality traits and those libidinally cathected somatic areas which had major significance during the ontogenetic scale of development. While some elements in these contributions are perhaps open to question, nonetheless their fundamental ideas have been elaborated at some length by other psychiatrists and psychoanalysts to form a highly comprehensive technical system of treatment.

I would like to make reference to the writings of Wilhelm Reich with especial emphasis on his formulation of the neurotic character.[3] It is his contention—which has received extensive corroboration from many engaged in the analytical disciplines—that it is from the ground of the neurotic character that eventually neurotic symptoms meaningfully arise. It is this hypothesis which is of major importance to those difficult therapeutic cases all too often dismissed after a few sessions because they tax the patience and ingenuity of the busy physician.

Reich's notion of the character armor—consisting of personality traits, habits, mannerisms and "psychic signatures" (to use Stekel's term for the same idea), together with varying groups of neuro-muscular tensions which accompany these ego-defences—is predicated on the basis of a sensitive ego which, in collision with dominant adults in its environment, is fearfully called upon to bottle up its own unacceptable impulses. This damming back of basic drives is accomplished primarily by repression. However, a fear is ever-present that the barricade may prove inadequate to the task of holding back powerful affective surges in different directions. Consequently alterations in ego-structure are gradually engineered, largely on the basis of manifold reaction-formations.

In this manner, two main events transpire. An ego or character trait comes to be developed, antipodal to the urge being blocked. Simultaneously, however, the affect becomes paradoxically anchored in the very personality trait which was developed to block its exit. This theme is elaborately and effectively described by Reich, illustrated by appropriate case material. The result of such character development is that while the ego does become enormously strengthened in withstanding its forbidden drives, its area of effective operation becomes markedly delimited by virtue of such reaction-formations. It is this limited neurotic character which apparently functions adequately enough in adult life until stresses and strains posed by reality situations of everyday life gradually ferret out the weak links in the character armor. Then it is that maladjustment symptoms are forced upon the neurotic character, to delimit it still further by way of protection, thus avoiding the anxiety that may result from conflictful situations.

However, it must never be forgotten that when neurotic symptoms do arise, they have meaning, motive, and purpose concealed somewhere within their structure. It is axiomatic of psychiatry that there are no meaningless symptoms any more than, as Jung advises, there are meaningless dreams. To make such a statement implies only our present lack of insight — understandable enough of course in view of the fact that usually the psychiatrist is a hurried and busy physician, attempting to accomplish more than is humanly possible. But whatever the symptom that is clinically presented, it is evident that some motivation existed demanding its intrapsychic development.

It is furthermore axiomatic of dynamic psychiatry that it is not a symptom therapy.

At all times, motive and meaning are sought for in order to render the patient's neurotic behavior intelligible both to the therapist and the patient. It is characteristic of Reich's formulation that not only does he agree with the above dynamic concepts, but he proceeds a stage further. His early therapeutic efforts, after anamnesis, are directed towards understanding the framework of the neurotic character that the patient presents during treatment, the fertile soil for the neurotic symptom formation. The psychodynamics of the transference is furthermore utilized in this connection. To the consulting room, the patient is bound inevitably to bring not only his neurotic character, but his characteristic modes of reaction that typify his former and earliest experiences. It is towards this neurotic character with its inherent reaction responses and defensive mechanisms that Reich directs his heaviest therapeutic artillery. If resistances to reality-situations have been formed prior to therapy, of necessity they will be expressed during therapy, being directed against the therapist and his efforts. In the event that—lightly regarding "psychodamnitis" as a new nosological entity—the patient presents reams of dreams,[4] or self-constructs tentative diagnoses based upon misreading of psychiatric literature, or irrational delusory beliefs, obsessions and compulsions, these must be regarded as symptoms that are characteristic of the patient's most cherished defenses. Evidently he does have something to hide, some wholly unacceptable part of his personality that must be dissociated, or otherwise blocked out from general view. This is his first line of defense.

What meaning is there in reams of dreams presented during the first session to the psychiatrist? Is it really to be cooperative? Or is there another motive? Of this symptom, Reich is most suspicious. He regards this apparent cooperativeness as *prima facie* evidence of negative transference. This first must be analyzed, worked through and dissolved before any therapeutic insight can be achieved. Are the reams of dreams indicative of the feeling that the patient wishes to be complimented by the therapist? If so, the patient clearly reveals his character armor which is the first material requiring attention. Insecurity and inferiority need to be worked through as character traits devolving from faulty psychogenesis in early years.

Discussion

Even when the patient presents meaningless masses of psychodynamic material that apparently defeat their own ends, the patient nonetheless is expressing the dynamics inherent in his own personality structure. These latter can only be understood in terms of character traits that once required development during the defenceless years of childhood as a shield and buckler against the slings and arrows of outraged fortune. Psychotherapy can only be successfully instituted when the symptom of "psychodamnitis" is treated as any other pathological symptom. Its dynamics require unearthing through an analysis of the resistance itself. Negative transference is invariably the dynamic factor here. When this defensive situation is exposed, clarified and worked through, progress in psychotherapy is more likely.

Summary

It is suggested that Reich's technique of the analysis of resistance, or of the character armor, be considered as the analytical therapy of choice in cases of "psychodamnitis". The latter is the symptom *par excellence,* not of total personality cooperation as seems at first sight, but of a negative transference with massive hostility lurking behind compliance. It is typical of infantile methods of dealing with the powerfully dangerous adults who once controlled the early environment.

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Adjustment Levels in Hospitalized Schizophrenic Patients Following Prefrontal Lobotomy

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Although a number of articles have recently appeared on the results of prefrontal lobotomy in schizophrenia,[1-4] it is still difficult to assess its value in patients with this diagnosis. We wish to add our experience in 45 cases.

Prefrontal lobotomy has been used at St. Elizabeths Hospital since 1942. A total of 84 patients have been subjected to operation. That this number is rather small, reflects the conservative attitude of the hospital staff toward lobotomy. In general the operation has been reserved for chronically ill, unmanageable patients who failed to respond favorably to more conservative treatment and who seemed destined for lifelong institutional care.

It is recognized that any group of patients diagnosed as schizophrenia is quite heterogeneous. Nevertheless, the group of patients upon which this study is based approaches homogeneity in the following respects:

(1) All patients in the group were legally committed to St. Elizabeths Hospital.

(2) All were diagnosed schizophrenia by the hospital staff at conferences held within a few weeks after admission.

(3) At the time of operation all patients had been ill for two or more years.

(4) Patients were selected for operation only after they had failed to respond favorably to more conservative, indicated and available treatment. In general the patients presented problems of assaultive behavior or suicidal tendencies.

(5) All operations (standard or radical lobotomy) were done either by Dr. James W. Watts or Dr. J. P. Murphy using the method described by Freeman and Watts.

(6) Patients who had been followed less than 6 months after operation were excluded from the series.

The study is based on a recent examination or report of each of 45 patients who fulfilled the above criteria. Some of these cases have been previously reported by Stevens.[5] None of the patients has been lost from contact except by death in 3 instances.

In order to avoid descriptive adjectives to indicate degrees of improvement, the patients have been classified according to what we have called levels of adjustment, since it was thought that the status of the patients at a given time (January 1, 1949) could be more accurately and meaningfully described in this way. Since schizophrenia is a way of living which produces disability mostly at a socio-economic level, this aspect was given considerable weight in the evaluation.

The living patients were classified into one of the following groups:

Level 1 (No employment, disturbed behavior, no re-socialization): These patients remain hospitalized and are problems from the standpoint of nursing care and supervision because of untidiness, assaultive behavior or suicidal tendencies. Most of these patients dress with urging and feed themselves but contribute nothing to the welfare of others. None is bedridden or unable to walk.

Level 2 (No employment, adequate behavior, no re-socialization): This is the passive dependent group. These patients remain entirely dependent on the hospital and contribute nothing to the welfare of others but are not problems from the standpoint of untidiness, assaultive behavior or suicide.

Level 3 (Partial employment, adequate behavior, moderate re-socialization): These patients work at simple tasks under supervision and are distinctly useful hospital citizens. Many are permitted to visit with relatives but require nominal supervision at home. None is steadily employed at a gainful occupation.

Level 4 (Adequate employment, adequate behavior, adequate re-socialization): These patients are regularly employed outside the

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hospital or have resumed the responsibilities of housekeeping.

Table 1 shows the levels of adjustment as of January 1, 1949. It is at once seen that the large majority of patients are in Level 2, while those in Level 1 approximately equal those in Level 3. Of the three deaths, none was attributed to the operation itself. One patient died of suffocation by food, one of pneumonia and one of pulmonary tuberculosis.

Table 2 shows the duration of illness in years prior to operation. Most of the patients who were subjected to operation had been ill for less than 10 years. More improvement was seen in this group. Yet improvement in some instances was seen even after 15 or more years of illness.

TABLE 1

Levels of Adjustment, January 1, 1949, of 42 Living Patients.

Level 1	9	22%
Level 2	21	50%
Level 3	8	19%
Level 4	4	9%
TOTALS	42	100%

TABLE 2

Levels of Adjustment as to Duration of Illness Prior to Operation.

	2 to 5 years	6 to 10 years	11 to 15 years	15 to 20 years
Dead	1	2	0	0
Level 1	4	2	2	1
Level 2	4	8	6	3
Level 3	2	5	1	0
Level 4	2	0	1	1
TOTALS	13	17	10	5

TABLE 3

Levels of Adjustment as to Educational Level Prior to Onset of Illness.

	4th grade or less	5th to 8th grades	9th to 12th grades	College
Dead	0	1	1	1
Level 1	1	3	4	1
Level 2	0	5	12	4
Level 3	0	1	4	3
Level 4	1	0	1	2
TOTALS	2	10	22	11

In Table 3 the cases are analyzed according to educational level prior to onset of illness. Although most of the patients operated upon had better than a ninth grade education, it is evident that poorer results were obtained in the relatively uneducated patients.

Table 4 shows the diagnostic sub-types into which the patients were classified at the time of admission to the hospital.

Table 5 shows the amount of shock therapy which the patients received prior to operation. Twenty patients did not receive any type of shock therapy because of physical contraindications or because it was thought not likely to be beneficial. Most of the remaining patients received more than 20 convulsions or comas induced by insulin, metrazol or electric current. One patient received as many as 93 electro-convulsive treatments.

Table 6 shows the type of operation relative to the plane of section. Nineteen of the patients had standard operation while 23 had radical operation. The remaining 3 patients had two operations each. Improvement to Level 2 or above was seen in all but 4 of 23 patients who had radical lobotomy but of 19 patients who had standard lobotomy, 6 remained at Level 1.

TABLE 4

Levels of Adjustment as to Diagnostic Sub-Type at Time of Admission.

	Catatonic	Paranoid	Hebephrenic	Mixed
Dead	2	1	0	0
Level 1	2	2	1	4
Level 2	15	4	1	1
Level 3	3	1	0	4
Level 4	2	0	1	1
TOTALS	24	8	3	10

TABLE 5

Levels of Adjustment as to Amount of Shock Therapy Received Prior to Operation.

	None	Less than 10	10 to 20	More than 20
Dead	2	0	1	0
Level 1	4	1	1	3
Level 2	12	0	1	8
Level 3	1	1	1	5
Level 4	1	2	1	0
TOTALS	20	4	5	16

In Table 7 the patients are grouped according to age at the time of operation. The youngest patient in the group was 21 years old and the oldest 51.

Table 8 shows the length of follow up observation. Of the patients who died, the number of months elapsed was 2, 11 and 29 respectively. Autopsy in each case showed as cause of death accidental suffocation by food, pulmonary tuberculosis and lobar pneumonia. The table shows that the largest group consists of those who have been followed from 6 to 24 months. In this group 5 out of 23 patients reached Level 3 or 4 while the same number remained in Level 1. In 7 patients followed 25 to 48 months, one reached Level 3. In 12 patients followed 49 to 72 months, six reached Level 3 or 4 while only 2 remained in Level 1. This would tend to indicate a trend toward improvement with the passage of time.

TABLE 6

Levels of Adjustment as to Type of Operation.

	Standard lobotomy	Radical lobotomy	Combined (2 operations)
Dead	1	1	1
Level 1	6	3	0
Level 2	6	13	2
Level 3	4	4	0
Level 4	2	2	0
TOTALS	19	23	3

TABLE 7

Levels of Adjustment as to Age in Years at Time of Operation.

	20 to 29	30 to 39	40 to 49	50 to 59
Dead	0	2	1	0
Level 1	3	4	1	1
Level 2	1	15	5	0
Level 3	2	4	2	0
Level 4	0	3	1	0
TOTALS	6	28	10	1

TABLE 8

Level of Adjustment as to Number of Months Elapsed Since Operation.

	Less than 6	6 to 24	25 to 48	49 to 72	More than 72
Dead	1	1	1	0	0
Level 1	0	5	1	2	1
Level 2	0	12	4	4	1
Level 3	0	4	1	3	0
Level 4	0	1	0	3	0
TOTALS	1	23	7	12	2

Conclusions

Based on the results in 45 patients the conclusions must at best be considered tentative. Nevertheless, the homogeneity of the group helps make them valid.

(1) The results of lobotomy must be considered palliative. On the whole improvement in behavior is striking. The patients change from aggressive, assaultive and often violent behavior requiring close supervision and seclusion to a state from which extramural adjustment again becomes possible. Most of those who remain in the hospital are now decently clothed, eat with other patients, attend amusements, are more tractable and no longer dangerous to the ward personnel. Although only a few patients are now able to work, treatment which salvages any from such a group seems worth while.

(2) Prefrontal lobotomy in chronic schizophrenia seems justified when all other methods fail. It is the policy at St. Elizabeths that the operation is not done in patients who have been ill less than two years. The best results from lobotomy are likely to be achieved, however, when the operation is done before as many as ten years have elapsed.

(3) The more highly endowed patients as indicated by educational level show better adaptive capacities following operation.

(4) Patients showing catatonic or mixed types of reaction seem to offer better prognosis than those of hebephrenic or paranoid reaction types.

(5) In the types of patients here represented the radical operation seems to offer the better chance of improvement.

(6) Lobotomy may produce beneficial results in patients who have failed to improve after long series of shock therapy.

(7) The study indicates a trend toward improvement with the passage of time following the operation.

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Neurological Clinical Pathological Conference

OF THE CINCINNATI GENERAL HOSPITAL

CHARLES D. ARING, M.D., Editor

CASE NO. 249665

Presentation

A 54-year-old white widow was admitted to the hospital on March 31, 1949 and died five days later. About three weeks prior to entry the patient complained of a cold with malaise, anorexia, vague bilateral shoulder pain, nausea and vomiting on two occasions. A physician was called but she refused examination. Weakness became prominent, she began to experience difficulty in rising in the morning and during the week before admission had spent much of each day resting in bed. Backache appeared and anorexia became almost complete. On the morning preceding admission she was found by neighbors sitting in a chair in an unresponsive state. A doctor who was called found her to have a left hemiplegia; there was strabismus and salivary drooling. Although conscious, she was unable to speak. Several hours later in the Receiving Ward, she spoke but was confused. No paralysis could be demonstrated; the temperature was 101 degrees F. and no blood pressure could be obtained.

Her father had died of tuberculosis and her mother of diabetes and old age many years ago. Her husband died of tuberculosis at the Dunham Hospital in 1937.

The patient appeared chronically ill; she was drowsy but conscious and spoke rationally when roused. The lips and fingers were cool and cyanotic, but the skin over the remainder of the body was warm, somewhat dry and showed no abnormal pigmentation. There was no facial asymmetry and the eyes moved in conjugate fashion. Pupils were 5 mm. in diameter, round and regular and reacted to light and on convergence. Retinal vessels showed only mild arteriosclerotic changes, and the optic discs were not elevated. There was no pigmentation of the mucous membranes and the tongue protruded without tremor in the midline. The temperature was 97.6 degrees F.

The lungs showed bronchial breath sounds at the right base and in the right axilla. Respirations were 18 per minute. The heart appeared quite small to percussion, sounds were distant and no murmurs were available. Blood pressure was still unobtainable; pulse was 82 per minute. Peristalsis was active and no organs or masses could be felt in the scaphoid abdomen. Pelvic examination revealed a small anteflexed uterus. A few small internal hemorrhoids were noted on rectal examination. The ankle jerks could not be obtained but the other deep reflexes were present and equal, though diminished. There were no pathologic reflexes.

Several hours later, after the patient had received continuous nasal oxygen and 1500 cc. of intravenous plasma, the blood pressure was 60/50 mm. and one hour later it was found to be 90/70 mm. Despite this improvement the patient had become comatose, incontinent and bilateral Babinski reflexes were noted. The temperature had risen to 102.8 degrees F., pulse 132, respirations 30. Emergency blood studies at this time revealed a blood urea nitrogen of 18 mg. per cent; the carbon dioxide combining power was 32.6 vol. per cent; the blood chloride, 480 mg. per cent and a blood sugar was reported as "less than 10 mg. per cent. The blood sugar determination was repeated on a second sample by another technician with the same result. The patient was given 50 cc. of 50 per cent dextrose in water intravenously. Before the injection was completed

the patient had awakened, became alert and was able to speak coherently although some mental confusion persisted.

Red blood cells numbered 4.8 million and the hemoglobin was 14 gm. per cent. The white blood count was 18,600 with 89 per cent neutrophiles. Urine pH was 4.5, specific gravity 1.016, albumin 1 plus. The sediment contained many clumps of white blood cells and many coarse granular casts. A soft, brown stool contained no blood. The blood Kahn test was 3 plus. An electrocardiogram taken shortly after admission showed a QT interval of 0.56 seconds when the heart rate was 78. Another tracing four days later was interpreted to show sinus tachycardia (118/min.), low voltage QRS complexes in all leads, myocardial damage and a QT interval which could not be measured.

Lumbar puncture on the day of admission revealed an initial pressure of 210 mm. of water and a final pressure of 180 following removal of 10 cc. of crystal clear fluid which contained only one lymphocyte per c mm. Cerebrospinal fluid protein was 65 mg. per cent, sugar 55 mg. per cent and chlorides 650 mg. per cent. The cerebrospinal fluid Wassermann was three plus, a gold curve was normal. A blood culture was negative and no enteric pathogens were isolated from a stool culture. Serum proteins were 5.11 gm. per cent. The thymol turbidity was 3 units, cephalin flocculation 3 plus in 24 hours and serum bilirubin 0.7 mg. per cent prompt and 1.6 mg. per cent total. On the 4th hospital day the serum sodium was 152 meq. per liter and serum potassium 6.6 meq. per liter.

P.A. teleo roentgenogram of the chest on March 30 was normal except for a small amount of pneumonic infiltrate in the right base and an old fracture of the right 9th rib posteriorly. A plain film of the abdomen on April 4 showed a moderate amount of gas in the small bowel with no other abnormality. No abnormal calcifications were seen. A portable chest film on April 4 revealed a small amount of fluid at the right base and a slight increase in the infiltrate with perhaps a small amount present at the left.

The patient was given intravenous infusions of 5 per cent dextrose in water or saline almost continuously. In addition she received 20 mg. desoxycorticosterone acetate (DOCA) and 45 cc. of adrenal cortex extract on the first day. By evening of the first day the blood pressure had risen to 98/78 and the pulse had fallen to 108. DOCA 5 mgm. and from 25 to 50 cc. adrenal cortex extract were given daily for the next four days. In addition 1 cc. doses of epinephrine in oil were administered when the blood pressure was unusually low. Considerable fluctuation in blood pressure was noted, the highest level recorded was 110/88 on the third hospital day. Thereafter attempts to combat shock were attended by less success and levels ranged from 84/68 down to 54/44. Blood sugar levels were measured frequently as a guide for glucose administration. Despite continuous infusions of glucose the blood sugar was consistently found to be between 70 and 160 mg. per cent. A trace of sugar appeared in the urine on only one occasion. The serum chlorides rose slowly from 480 mg. per cent to 618 mg. per cent. The CO_2 rose to 48.3 vol. per cent on the third day and then fell to 32 vol. per cent the day before death. The blood urea nitrogen remained normal.

The patient remained conscious but lethargic. Some fluctuation was noted in her level of awareness. She was able to cooperate, recognize friends and relatives, but the sensorium remained clouded. Neurological examination was normal.

Penicillin had been started on admission and was attended by prompt fall in temperature and leukocyte count to normal. On the third day the temperature rose again to 102 degrees F. and stayed at that level. A blood transfusion was given on the 3rd and 4th days when the hemoglobin was found to have fallen to 8.5 gm. and the red count to 2.25 million.

On the 5th day the patient was noted to have slight facial edema. Later in the same day bronchial breath sounds reappeared throughout the right lower lung field and a trace of edema was noted in the upper extremities. At 1:30 a. m. of the 6th day respirations suddenly became labored and ceased abruptly. Coramine, oxygen and artificial respiration were administered to no avail.

Differential Diagnosis

Dr. I. Arthur Mirsky:* The clinical history of this patient is characterized by a relatively

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rapid development of circulatory collapse which was associated with a marked hypoglycemia. The neurologic signs and symptoms and their disappearance with the administration of glucose are in accord with the well-known effects of hypoglycemia on the central nervous system. Consequently in approaching the differential diagnosis we may begin with a consideration of the causes of hypoglycemia. The most common factors responsible for spontaneous hypoglycemia are:

(1) Hyperinsulinism due to pancreatic adenoma or carcinoma of islet cell origin or to hypertrophy of the islets of Langerhans.

(2) Hepatic disease.

(3) Adrenal cortical insufficiency.

(4) Anterior pituitary insufficiency.

(5) Lesions of the hypothalamus.

The relatively sudden onset and rapid progression of the symptoms which this patient presented are not characteristic of hyperinsulinism due to adenoma of the pancreas. Especially is it rare to find anorexia and such severe asthenia in hyperinsulinism which is usually characterized by low fasting blood sugar levels and very prompt clinical response to the administration of glucose. Further, the hypoglycemia or hyperinsulinism is associated with a rising blood pressure rather than with the profound hypotension observed in this patient. The persistence of a confused sensorium and diminished deep reflexes after therapy speak against hypoglycemia as the only causative factor since the administration of glucose in a patient with hyperinsulinism usually results in a complete restitution to normal which indeed may be associated with hyperflexia.

Hypoglycemia due to a disturbance in hepatic function is usually the result of decreased gluconeogenesis consequent to an extensive diffuse degenerative disease of the liver. The rate at which the symptoms developed in this patient and the moderate degree of liver damage indicated by the function studies do not support a diagnosis of hepatogenic hypoglycemia. A sudden onset of severe hypoglycemia may occur in the patient with extensive, acute hepatic damage, as with acute yellow atrophy, but there were no evidences of such a condition in this patient.

The relatively sudden onset and rapid development of anorexia, nausea, vomiting, severe asthenia and especially weakness on arising in the morning, profound hypotension and other evidences of circulatory collapse, marked hypoglycemia and its associated symptomatology, dehydration and a high serum potassium are all highly suggestive of Addison's disease. Particularly should this be considered in a patient with a familial history of tuberculosis. The fact that the onset was apparently precipitated by a relatively mild infection is also in accord with the marked susceptibility to stress exhibited by the patient with classical adrenal insufficiency. In keeping also are the physical findings and the prolonged QT interval which suggest a small, distended heart with flabby musculature. The electrocardiogram changes may well be due to a high concentration of potassium in the serum. The presence of a moderate degree of liver damage is also a not infrequent finding in patients with adrenal insufficiency.

The hematological picture reported may reflect dehydration though the normal urea nitrogen is inconsistent. It is difficult to account for the severe anemia which ensued when treatment was instituted since no evidences of bleeding are presented. The marked change in the hematologic picture may merely indicate the degree of hydration produced by the repeated parenteral administration of fluids which may have been somewhat heroic in the effort to maintain a normal blood sugar concentration. It must be noted that anemia of the degree recorded is rare in the patient with adrenal insufficiency.

The crisis of acute adrenal insufficiency is usually related to a loss of sodium and chlorides in the urine, and a subsequent disturbance in the intracellular and extracellular electrolyte balance. This is reflected by dehydration and circulatory collapse. Although some indications of dehydration can be found in the protocol some of the blood electrolytes (i.e., sodium and chloride) are within normal limits and so is the blood urea nitrogen. It is true that the rare case with Addisonian crisis may exhibit vasomotor collapse and death in the presence of normal blood electrolytes. Such patients, however, do not have hypoglycemia. Hypoglycemia follows rather than precedes the electrolyte loss in the Addisonian crisis.

It is possible that the patient may have

had a normal blood chloride but a low serum sodium prior to the institution of treatment. Such an hypothesis is supported by the mild acidosis reflected in the low CO_2 combining power since, in crisis, the urinary loss of sodium may be considerably greater than that of chloride.

This patient's clouded sensorium, the evidences of irritability and the inadequate response to glucose administration are occasionally observed in patients with adrenal insufficiency and probably indicate that the central nervous system changes cannot be attributed to the hypoglycemia alone but may be due to some of the other changes associated with adrenal insufficiency.

I must say, though, that there are many features of the classical picture of Addison's disease which do not appear here. There is no diarrhea, pigmentation or vitiligo. Inconsistent also are the high temperature in the presence of peripheral vascular collapse, the normal blood chlorides, the normal urea nitrogen and the normal blood proteins.

One suspects further that we may not be dealing with the crisis of classical Addison's disease in the fact that such patients usually develop the crisis within several days after a precipitating episode with a relatively long history of typical symptomatology. However, an acute cessation of adrenal cortical function may occur as the result of a thrombosis or of some other vascular accident in the adrenal or in association with severe infection as in the Waterhouse-Friderichsen Syndrome. These conditions may produce an acute adrenal insufficiency but are usually characterized by a more fulminating course.

The question may be raised as to whether acute adrenal insufficiency can occur without the development of marked electrolyte changes but with a marked disturbance of carbohydrate balance. This does occur in patients with acute anterior pituitary insufficiency who may present all or many of the signs and symptoms of adrenal insufficiency with marked hypoglycemia but with a normal or only slightly depressed concentration of sodium and chloride in the blood. In such patients the blood urea nitrogen is usually normal while fatal hypoglycemia may ensue if the anorexia is prolonged or if the patient is exposed to infection. The observations in this patient are quite consistent with those associated with acute anterior pituitary insufficiency.

The absence of appropriate neurologic manifestations would seem to make a pituitary tumor unlikely. It is possible, of course, that the signs and symptoms observed in this patient may be attributable to an insufficiency of the anterior pituitary resulting from some vascular lesion such as hemorrhage or thrombosis. Such lesions need not be reflected by changes in the cerebrospinal fluid or in the production of any significant neurologic alterations. However, the fact that in this case an infection precipitated the syndrome suggests that the hypopituitarism may have been more chronic in nature and that the terminal insufficiency was acutely produced. The statement that the patient appeared to be "chronically ill" suggests that some observer saw evidences of loss of weight which might represent the effects of a more chronic anterior pituitary insufficiency. In view of the history of tuberculosis in the family and of the positive tests for syphilis in both the blood and cerebrospinal fluid, it is possible that a tuberculous or syphilitic granuloma of the anterior pituitary may have been responsible for the chronic insufficiency. The absence of evidences of pulmonary tuberculosis suggests the probability that syphilis may be the more likely responsible agent.

In summary this patient presented evidences of an acute adrenal insufficiency such as that which occasionally follows upon an acute insufficiency of the anterior pituitary gland. The latter may have been due to either some vascular accident or to some inflammatory reaction consequent to tuberculosis or syphilis of the pituitary gland. Of the two, syphilis would appear to be the more probable etiologic process.

The death of the patient may be attributed to inadequate adrenal cortical therapy since in acute adrenal insufficiency, doses of extract exceeding 100 cc. per day are usually required. Furthermore, the administration of large volumes of fluids parenterally is particularly dangerous in such patients because of the feeble cardiac musculature. The fact that evidence of increasing pleural effusion was observed during the course of therapy may signify that the patient developed a progressive cardiac failure with an ultimate pulmonary edema. Indeed, desoxycorticoste-

rone acetate itself, in the presence of normal electrolyte balance, may have played a role in the retention of water and the production of edema.

Dr. Richard W. Vilter: Would you tell us, Dr. Mirsky, how deficiency of the pituitary leads to hypoglycemia?

Dr. Mirsky: Essentially, there are three major hormones produced by the anterior pituitary which influence the metabolism of carbohydrate. These are the growth hormone, the thyrotropic hormone and the adrenocorticotropic hormone (ACTH). The thyrotropic hormone, acting through the medium of the thyroid gland and the consequent production of thyroid hormone, influences cellular catabolism. The growth hormone in the presence of insulin, on the other hand, is mainly anabolic in nature and influences the storage of protein. The adrenocorticotropic hormone, through its stimulation of the corticosteroids of the adrenal plays an important role in stimulating the conversion of protein to carbohydrate. In the absence of ACTH, and with a deficit of the other anterior pituitary hormones protein mobilization and conversion to carbohydrate is limited and the individual then becomes completely dependent upon carbohydrate intake for the maintenance of the blood sugar level. Therefore, in fasting periods, the blood glucose level will fall to inordinately low levels and following the parenteral introduction of glucose it is quickly utilized. Consequently the correction of the hypoglycemia can be accomplished only with great difficulty. That, I believe, is what happened in the patient under discussion.

Dr. Albert A. Brust, Jr.: Have you ever seen blood glucose levels as low as reported here?

Dr. Mirsky: Indeed, I have. I have seen them as low as zero and if this level is attained slowly, the patient may show none of the usual clinical manifestations of hypoglycemia.

Dr. Stanley E. Dorst: Were x-ray films taken of the skull?

Dr. Brust: No, they were not.

Pathological Discussion

Dr. Edward A. Gall:* Dr. Mirsky has given a most lucid explanation for the tangled circumstances surrounding this clinical problem. Among clinicians it is often customary to disclaim the validity of laboratory results where they do not conform to what appears to be a conclusive clinical syndrome. I suspect, in this instance, Dr. Mirsky's great experience with laboratory procedures prevailed and he was not led astray by the weight of clinical evidence alone.

This patient came to autopsy 10 hours after death. There was, as had been noted clinically, edema of the face and both upper and lower extremities. Fluid retention was also evidenced by pleural effusion and ascites of moderate amount.

The lungs were boggy, weighing together 1050 gms. They were the seat of a confluent bronchopneumonia affecting both lower lobes and, in addition, contained many recent pulmonary infarcts ranging in size up to 2 cm. Pulmonary emboli involving smaller arteries were readily detected. The source of the emboli proved to be the right auricle which contained a large mural thrombus. The heart, though weighing 300 gm., was somewhat dilated and its musculature was quite flabby. Microscopic study revealed the presence of many foci of recent necrosis of miliary caliber having the appearance of anoxic infarcts. In a few regions these had become completely fibrosed. The aorta was dilated in its proximal segment and showed abundant greyish atheroma in this region. The gross and microscopic changes were wholly consistent with a syphilitic aortitis of mild severity.

The liver was small, weighing 1225 gm. and had a most unusual appearance. Its capsule was smooth but indented by deep fibrous clefts so that its major lobes were subdivided into many subsidiary lobations giving the appearance characterized as hepar lobatum. This is the usual picture produced by the healing of hepatic gummas. Indeed there were also present beneath the capsule several bright yellow nodules of caseous material which on closer study proved to be active gummas. Related to these were the usual vascular changes associated with syphilis. The pancreas was entirely normal and the spleen, though enlarged to 350 gm. was unremarkable.

The kidneys, too, were normal but the adrenal glands, though exhibiting normal relations and gross characteristics, were about one-third average size. Microscopic study of

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these showed over-all cortical shrinkage particularly striking in the zona glomerulosa. Although the architectural pattern was undisturbed, it was quite apparent that the cortical cells were almost wholly lacking in secretory activity. They were small, deeply staining, deficient in vacuoles and contained inactive-appearing basophilic nuclei.

The ovaries and uterus were minute. Atrophy might have been anticipated, of course, in view of the post-menopausal state, but the diminished size of these organs seemed far out of proportion to the usual bulk at this age.

The brain was of normal size and configuration. The usual stigmata of edema were totally lacking. The pituitary, however, was approximately twice normal size and the sella turcica was likewise enlarged although the clinoids were intact. Upon section it was apparent that the normal landmarks were obliterated by what was thought to be a neoplastic process. This appeared to extend into the hypophyseal stalk and the floor of the third ventricle. Microscopic examination, however, revealed an identical process to that seen in the liver. Foci of caseous necrosis were encompassed within an irregular fibrosing lesion in which lymphocytes, plasma cells and many reactive multinucelated giant cells appeared. Vascular cuffing and luminal narrowing were prominent features. Nowhere were there tubercles found. Glandular epithelium survived but was gathered into attenuated clusters widely separated by the interstitial scarring. The same lesion extended into the tuber cinereum with diminishing intensity and the meninges in the vicinity revealed a plastic exudate characterized by perivascular gathering of round cells.

Stains for acid fast organisms in the necrotic foci were completely negative. A single Levaditi stained preparation failed to reveal treponemas. Nevertheless, the character of the lesion and its distribution seem unquestionably the result of tertiary syphilis as Dr. Mirsky so ingeniously predicted on the basis of the complicated but consistent clinical data.

One would presume that the sequence of events were on the order of progressive pituitary deficiency as the result of gummatous infiltration followed by diminished adrenocorticotropic hormone production with secondary adrenal cortical insufficiency. Pluriglandular deficiency may be hypothesized although, unfortunately, the thyroid and parathyroid glands were not examined at necropsy. The resultant circulatory collapse and hypoglycemia were instrumental in the production of the focal anoxic myocardial infarcts; an auricular mural thrombus supervened and embolic dislodgement caused, latterly, multiple pulmonary infarcts, thus adding an insuperable burden to the circulatory difficulty. It is not possible to determine on anatomic grounds whether the terminal edema was due to heart failure alone or to electrolyte imbalance.

Clinical Diagnosis

Pancreatic adenoma.
Adrenal insufficiency.

Dr. Mirsky's Diagnosis

Anterior pituitary deficiency probably due to syphilitic granuloma of the pituitary.

Adrenal insufficiency due to secondary adrenal atrophy.

Cardiac failure with pulmonary edema.

Anatomical Diagnosis

Tertiary syphilis,
- a) Multiple gummas, pituitary and liver.
- b) Syphilitic cirrhosis, hepar lobatum.
- c) Chronic meningitis, basilar, probably syphilitic.

Pluriglandular atrophy, adrenals, internal genitalia.

Miliary anoxic infarcts of myocardium,
- a) Mural thrombus, right auricle.
- b) Lobular pneumonia, confluent.
- c) Pulmonary infarcts, multiple.

Dr. Vilter: To what do you attribute the edema, Dr. Mirsky?

Dr. Mirsky: I think that the corticosterone therapy had much to do with the water retention. Certainly circulatory failure contributed. Incidentally, the extent of the liver damage probably played a role in the production of the hypoglycemia resulting from the anterior pituitary and adrenal insufficiency.

Dr. Gall: It may well have, although I must say the hepatic lesions were distinctly focal and much functionable parenchyma was intact.

Dr. Dorst: How often is syphilitic involve-

ment of the liver found in your current autopsy experience?

Dr. Gall: During the past year this has been the only case I can recall. How about our past experience here, Dr. Zeek?

Dr. Pearl M. Zeek: We have seen it rarely in recent years, although 20 years and more ago, it was of relatively common occurrence.

Dr. Dorst: That is what I would have guessed.

Dr. Vilter: How did you exclude tuberculosis as an etiologic agent, Dr. Mirsky?

Dr. Mirsky: My grounds may have been tenuous but the absence of pulmonary tuberculosis, and the laboratory evidences of syphilitic infection caused me to lean more toward syphilis. Naturally, a pituitary tumor was the first diagnosis to consider but it seemed to me that a tumor would have produced neurologic changes of more than transitory nature.

Use of Seconal Sodium in Electroconvulsive Therapy

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A wealth of clinical evidence during the past years has made electro-convulsive therapy generally acceptable as an efficacious form of treatment of the affective disorders. In order that this form of treatment may attain a higher degree of therapeutic efficiency, attention has been turned to complications which coincidentally occur.

Bennett's pioneer work with curare in artificially induced convulsion has not only provided patients with a maximum of protection against trauma, but has also made this form of treatment more generally acceptable to both laymen and physicians, and has certainly stimulated further attempts at refinement. Certain mental hazards, however, such as preshock apprehension and fear, and postshock delirium and confusion, have been in many patients real obstacles towards the satisfactory completion of the treatment course.

Because we found it necessary to treat a large group of patients, time has become a factor of extreme importance in providing adequate treatment. The use of curare in those cases greatly reduced the efficiency of personnel involved because of the necessity of slow administration of this drug with a relatively long waiting interval for its optimum effect. Therefore, our interest has been directed towards the use of the fast acting barbiturates. Of these we have found Seconal Sodium to be an exceedingly satisfactory premedication. We have found that with curare one treatment takes about 9 minutes while with seconal sodium the entire treatment of one patient takes only 4 minutes. In treating, for example, 20 patients in one morning we would save about 1½ hours by this method. These 1½ hours constitute a vital part of the most needed hours in the forenoon.

Procedure

We wish to emphasize that the use of this drug does not obviate the necessity of trained personnel and a standardized method of administration. Seconal Sodium is given intravenously in doses depending not only upon the weight of the patient, but also the degree of musculature and the type of body habitus. Thus a heavily muscled pyknic type individual would be given a slightly greater dosage than a slender or obviously obese person with less developed musculature although of the same weight. The dry, crystalline Seconal Sodium is mixed in such a manner that one grain is dissolved in 1 cc. of distilled water. As a general rule the minimum amount given of this solution is 3 cc. The maximum of 4 cc. should not be exceeded. Variations within these limits were found satisfactory for weights ranging from 115 pounds to 220 pounds in healthy males. The entire solution is injected within five to eight seconds in an antecubital vein. Venous thrombosis is a rare occurrence. We have found the time for optimum therapeutic success to be 40 seconds in most cases. A rare individual

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expresses a transitory excitement 10 to 20 seconds following the administration. Some extremely heavy, well muscled individuals require up to 90 seconds for a full degree of relaxation, but we find that over 40 seconds the convulsive threshold is measurably increased. We do not believe there is any contraindication to increasing voltage and time factors to the slight degree necessary in these instances. The patient is placed in a supine position in slight hyperextension. A small firm pillow is placed beneath the lumbar spine and a hard roll is placed immediately caudad to the inferior angle of the scapulae. Two attendants are placed at either side of the patient, applying firm pressure on the anterior shoulder, wrist, anterior iliac crest, and distal thigh. One assistant is placed at the head for the ordinary traction on the chin and occiput.

Results

This series comprises 115 male veterans receiving a total of 2,702 grand mal seizures. All patients reviewed in this series had pre-shock and post-shock x-rays of lateral and anterior posterior views of the thoracic and lumbar vertebrae. All cases treated since January 2, 1947, who had evidence of pre-shock abnormalities are included. Of 115 patients, 12 patients received curare because of the more or less severe degree of bony abnormalities—usually a previous fracture. Such patients had pre-shock fractures varying from minimal wedging of thoracic vertebrae to a mid-clavicular fracture held in good position by screws. (Some of these patients with skeletal pathology have been previously described in full[1]). Of this particular group, 2 patients in whom some wedging of thoracic vertebrae was present received additional thoracic wedging. One was asymptomatic; the other complained bitterly of low back pain.

One patient with a complete fracture of a transverse vertebral process which was overlooked on first review of the pre-shock x-ray, inadvertently received Seconal Sodium. There was no exaggeration of this fracture and no complaint of back pain by the patient who, as a rule, had a myriad of abnormal, petty complaints.

Of the 103 patients receiving Seconal Sodium, nine had post-shock fractures. This represents a post-shock fracture percentage rate of 8.7. If the above twelve curare patients are included on this basis, the total post-shock fracture rate is 9.6 per cent. Of the former group eight were mild, asymptomatic wedging deformities of the thoracic spine. Only one of the group certainly represents a major fracture consisting of a comminuted fracture of the right scapula from which the patient is at this time making a good functional recovery. This compares very favorably with other similar studies.

Discussion

From a subjective standpoint, there is considerable variance of opinion among physicians and attendants occupied in this treatment in estimation of the comparative strengths of the initial tonus between curare and Seconal Sodium. The majority believe that the initial jerk was less with curare, but the fact that the opinion is equivocal minimizes the importance of any difference.

Other hazards to be overcome in electro-shock therapy undoubtedly demonstrate the efficacy of Seconal Sodium over curare. Only two patients in the Seconal group exhibited any amount of uncontrollable apprehension before treatment. They had episodes of severe agitated delirium. This typically occurred ten to twenty seconds after injection. Lucid patients with minor degrees of psychosis volunteered the information that they almost immediately lost consciousness in a pleasant manner and never remembered application of electrodes or introduction of the mouth gag. Different observers, who had only seen electro-convulsive therapy either without any premedication or with curare in different hospitals, agreed that Seconal Sodium as premedication seemed to have changed the attitude of the patients towards the treatment entirely. The majority of the patients come into the treatment room at least friendly and cooperative if not smiling. There is no more "dragging" of the patients to the treatment table. The patients talk freely about their experience as to the treatment.

Most cases were sedated below the level of narcosynthesis so that agitated subconscious activity constituted no problem. In addition only three patients in this series were agitated following treatment. Most patients were free of sedative effects from one

to two hours following treatment. If patients are encouraged to get up quickly we found that very few complained later of headache or feeling of being nauseated. Most patients wake up peaceful, calm and unafraid. Therefore they are easier to watch and less trained personnel is necessary to supervise this stage of the therapy. Memory defects appeared less frequently with Seconal Sodium than with curare.

We did not observe any patients who had serious respiratory embarrassment following Seconal Sodium. Skin color was always pink and usually quite in contrast to the dark and in some cases cyanotic coloring of the curare patients.

Especially in patients who have cardiac complications Seconal Sodium is definitely superior to curare because there is no aggravation of symptoms as seen not infrequently with curare. Patients with decompensation or auricular fibrillation tolerate Seconal Sodium very well. (One of the authors observed several hundred patients treated with Seconal Sodium at the Lutheran Hospital, Omaha, Nebraska, between 1944 and 1946).

Another very important point is the fact that in patients who are extremely apprehensive and fearful prior to their first electric-shock treatment in this hospital, Seconal Sodium, within a few seconds, relieves these symptoms of anxiety and tension.

No fatalities have occurred in this series.

Summary

1) Seconal Sodium as premedication in ECT is applicable in a highly efficient manner at large treatment centers where time, personnel and economy are important factors.

2) This drug used in conjunction with trained personnel in standarized manner provides a greater safety margin than other barbiturates or curare.

3) This drug allays pre-shock apprehension and fear, post-shock excitement, and respiratory embarrassment.

4) The technique is outlined.

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Authors' Note: Seconal Sodium used is Sodium-Propyl-methyl-carbinyl Allyl Barbiturate, Lilly.

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